

CLAIMS

1. A method for obtaining a transformed plant based on a phenotype relating to a size or the organic acid composition of a storage organ of the plant, characterised in that it comprises the following stage:
5 - modification, in the cells of the storage organ or in the tissues supplying the storage organ, of the expression of a gene encoding an outward rectifier potassium channel of the said plant.
2. The method according to Claim 1, characterised in that
10 - at least one cell of the plant is transformed by the gene encoding the outward rectifier potassium channel,
 - the transformed cell is transformed, and
 - a transformed plant is regenerated from the transformed cell.
3. The method according to any one of Claims 1 to 2,
15 characterised in that the gene whose expression is modified encodes a polypeptidic sequence having at least a 40% similarity with a polypeptidic sequence deduced from the nucleotidic sequence encoding an outward rectifier potassium channel derived from *Vitis Vinifera* (VvSOR).
4. The method according to any one of Claims 1 to 3,
20 characterised in that the gene is over-expressed in order to increase the size and/or modify the organic acid composition of the storage organ.
5. A transformed cell, characterised in that it is obtained by the method according to any one of Claims 1 to 4.
6. A transformed plant, characterised in that it is obtained by the
25 method according to any one of Claims 1 to 5.
7. A method of selection of a plant based on a phenotype relating to a size of the storage organs of the said plant and/or on its organic acid composition, characterised in that the expression of a gene encoding an outward rectifier potassium channel of the plant in the cells of the storage
30 organs or in the tissues supplying the storage organs is measured.
8. Method according to Claim 7, characterised in that the gene whose expression is measured encodes a polypeptidic sequence having at least a 40% similarity with a polypeptidic sequence deduced from the nucleotidic sequence encoding an outward rectifier channel derived from *Vitis*
35 *Vinifera* (VvSOR).

9. The method according to any one of the claims to 8, characterised in that

- a quantity of RNAm derived from a transcription of the gene is measured, or

5 - a quantity of proteins resulting from the expression of the gene is measured.

10. The method according to Claim 9, characterised in that the measurement of the quantity of RNAm is carried out during the development of the storage organs, and in that the measurement of the proteins is carried
10 out during or after the development of the storage organs.

11. A cell of a plant, characterised in that it over-expresses a gene encoding an outward rectifier potassium passage whose polypeptidic sequence has at least a 40% similarity with a polypeptidic sequence deduced from the nucleotidic sequence encoding an outward rectifier channel derived
15 from *Vitis Vinifera* (VvSOR).

12. A plant, characterised in that it over-expresses a gene encoding an outward rectifier potassium channel of the said plant whose polypeptidic sequence has at least a 40% similarity with a polypeptidic sequence deduced from the sequence encoding an outward rectifier channel derived from *Vitis*
20 *Vinifera* (VvSOR).

13. The use of a gene encoding an outward rectifier potassium channel of a plant for modifying in this plant a phenotype relating to a size and/or the organic acid composition of at least one storage organ

14. The use according to Claim 13, characterised in that the gene
25 encodes a polypeptidic sequence having at least a 40% similarity with a polypeptidic sequence deduced from the sequence encoding an outward rectifier potassium channel derived from *Vitis Vinifera* (VvSOR).

15. The use according to any one of Claims 13 to 14, characterised in that

30 - the gene in the cells of the storage organ is over-expressed.

16. An antibody, characterised in that it is directed against all or part of a polypeptide derived from the expression of a gene encoding an outward rectifier potassium channel of a plant.

17. The antibody according to Claim 16, characterised in that the
35 gene encodes a polypeptidic sequence having at least a 40% similarity with

a polypeptidic sequence deduced from the sequence encoding an outward rectifier potassium channel derived from *Vitis Vinifera* (VvSOR).

18. A method for detecting the presence of all or part of a polypeptide resulting from the expression of a gene encoding an outward
5 rectifier potassium channel of a plant in a sample comprising a mixture of polypeptides, characterised in that it comprises the following stages:

- putting the sample in contact with an antibody according to any one of Claims 16 to 17, and
- detecting an antigen/antibody complex formed.

10 19. The method according to Claim 18, characterised in that the gene encodes a polypeptidic sequence having at least a 40% similarity with a polypeptidic sequence deduced from the sequence encoding an outward rectifier potassium channel derived from *Vitis Vinifera*).

20. A kit for detecting all or part of a polypeptide produced from a
15 gene encoding a potassium channel of a plant in a sample containing a mixture of polypeptides, characterised in that it comprises

- an antibody according to any one of Claims 16 to 19.

21. The detection kit according to Claim 20, characterised in that
20 the gene encodes a polypeptidic sequence having at least a 40% similarity with a polypeptidic sequence deduced from the sequence encoding an outward rectifier potassium channel derived from *Vitis Vinifera* (VvSOR).